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KINETIC AND SYNTHETICAL MANIFESTATIONS OF IMPORTANT REACTIONS OF HYDROPHOSPHORYL COMPOUNDS

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Hydrophosphoryl compounds (HPC) is one of the most important and interesting types of organophosphorus substances. That is why a lot of their reactions are the authorized reactions in organic chemistry (Michaelis-Becker, Pudovik, Abramov and Kabachnic-Fields Reactions). In the presented work we have carried out systematic kinetic and synthetical investigation of mechanisms of the Pudovik, Abramov and Kabachnic-Fields reactions and also the reactivity of HPC in these reactions.

The main features of reaction mechanisms and their dependence on the reagent structure, solvent and catalyst nature have been established. By the method of regression analysis it is shown that the HPC reactivity is determined by electronic, steric and stereoelectronic substituent effects and also is significantly depended on catalyst basicity and protolitic properties of the media.

Quantitative correlations obtained are in a good agreement with qualitative manifestations of the reactions studied, and permit to carry out not only interesting theoretical conclusions but also some important principles of optimal and effective organophosphorus synthesis with the participation of hydrophosphoryl compounds.

The work is realized with financial support of the S.- Petersburg Competition Center.